

ABSTRACT OF THE DISCLOSURE

Plies of continuous fiber material are oriented and cut to the intended shape of a structural component, such as the vertical tail of an aircraft. Two skins or laminates are created by laying the cut-to-shape plies into a matched mold, with over-woven or over-braided mandrels or similar tooling details placed between the skins. The mold is closed and a thermosetting resin is injected into the mold to fully impregnate any fibers that were unimpregnated at the time of mold closure and to fully fill all void areas inside the mold. The mold is held closed with pressure, such as by a press, and heated to cure the resin while the resin in the mold is subjected to a hydrostatic pressure sufficient to constrain growth of voids. The contiguous faces of the impregnated braid or weave covering the mandrels are united by the resin, forming vertical or angular laminate between the inner faces of the skins. The resin similarly unites the portions of the braids or weaves that are contiguous with the inner surfaces of the skins, bonding the braids or weaves to the skins to create a unitized structure. The resulting structure is capable of functioning without addition of mechanical fasteners that are required in conventional structures to join skins to understructure.

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